Hasselblad and Zeiss sign Coopera­tion Agreement

Victor Hasselblad, Sweden, and Carl Zeiss, Germany, on 24 January 2001 signed a cooperation agreement to further strengthen the Hasselblad medium format camera system’s leading position in image quality and versatility.

The agreement confirms the importance of a long tradition of cooperation between the two companies in providing discerning photographers worldwide with a camera system which excels in image sharpness, reliability and lasting value. Over the years Carl Zeiss lenses have been the backbone of the classical Hasselblad 6 x 6 system and among others much appreciated for their unique fully mechanical, all-metal central shutter which allows Hasselblad cameras to operate without batteries and synchronize with flash at all speeds.

Hasselblad and Carl Zeiss both share a commitment to photographic excellence. They will continue to explore ways to improve on excellence without breaking with the tradition of compatibility. The concept by which any new and improved lens or camera will maintain compatibility with older cameras and lenses. The relationship between Hasselblad and Carl Zeiss started in 1950 with a handshake agreement between Victor Hasselblad and Dr. Hans Sauer in Gothenburg. The choice then, as today, was motivated by Carl Zeiss’ proven excellence in lens design and state of the art manufacturing in Oberkochen in the south of Germany.

Since then Carl Zeiss have designed 8 distinctive lens series for Hasselblad, over 80 different lens models and sold approximately 1 million lenses to photographers worldwide. The most recent introduction in 1999 was of 10 new lenses in the CFI and CFE series which have led to record sales in the year 2000. For images from the recent meeting at Victor Hasselblad AB in Gothenburg and further information check www.hasselblad.se and www.zeiss.de/photo

Teleconverters Their Pros and Cons

When it comes to the use of teleconverters in photography, there are ardent believers as well as fierce opponents. The opponents insist that teleconverters lower the image quality unacceptably. However, the quality-concerned Carl Zeiss has been making Zeiss Mutar® teleconverters for decades. How does that fit?

We at Zeiss believe that teleconverters have their merits. However, extreme care in conception, manufacture and use must be observed to allow their successful use. As in every aspect of life, there is no simple, universally applicable solution to a wide range of problems. Thus, the use of one or several general-purpose teleconverters will never totally substitute for the judicious use of the best-suited prime lens in a given situation.

However, high-quality Zeiss Mutar® converters, used in conjunction with Zeiss prime lenses, can be an effective solution to many problems, when used with discretion. In the following article we will go over some important facts to enable discerning photographers to make a wise decision about the use of a teleconverter:

Pros:
• A teleconverter makes two focal lengths available with only one lens. This is very convenient e.g. in wildlife photography.
• A lens combined with a teleconverter is normally smaller and lighter than a “direct” telephoto lens of the same speed and focal length. This can ease carrying, packing, and handling considerably.

• A lens combined with a teleconverter is normally cheaper than a “direct” telephoto lens of the same speed and focal length, and much cheaper than the combined cost of the two telephoto lenses. This is certainly attractive especially for the amateur photographer.

• A teleconverter offers a practical solution, where even the longest focal length in a camera system’s optical arsenal is still too short. This is an essential aspect in wildlife photography. Paparazzi also appreciate this point.

• A teleconverter usually maintains the close focusing limit of the prime lens, thus increasing the magnification significantly.

Cons:

• All teleconverters lower the speed of the attached lens by at least 1 stop (1.4 x teleconverter) or 2 stops (2 x teleconverter). This is unavoidable due to the very working principle of the teleconverter.

• Almost all non-Zeiss teleconverters for 35 mm photography cause an additional light loss of 0.3 stops (1.4 x teleconverters) to 0.7 stops (2 x teleconverters) due to attempts at cost-saving in design and manufacturing. This is avoidable and is avoided with all Zeiss Mutar® converters.

• Teleconverters add from five to seven optical elements and several glass-to-air-surfaces to the optical system. This added amount of glass will lower the light transmission and increase the stray light level (flare) both of which reduce image brilliance.

• Since teleconverters magnify every detail in the image, they logically also magnify residual aberrations of the prime lens. It is therefore recommended to use a Mutar® with a fixed focal length lens except in a “do-or-die” situation. Most zoom lenses introduce more compromises.

• Camera bayonets, as used to combine a lens with a converter, must allow for far greater mechanical positioning tolerances than the mechanics used inside a Zeiss lens. Therefore a combination of lens and converter, with a lens/mount interface in between optical elements and several glass-to-air-surfaces to the optical system. This is avoidable and is avoided with all Zeiss Mutar® converters.

Do you Lose or Gain with the CLA 35 HD by Angénieux and Zeiss?

In the eyes of many cameramen and salespeople the Cine Lens Adapter CLA 35 HD by Angénieux and Zeiss resembles a “converter”. This concept, and this term, remind them of “teleconverter” and they then begin thinking, “These devices give a magnified image, but at the cost of reduced lens speed and often, significantly reduced image quality.” With these thoughts in mind, they might be reluctant to try or to promote the CLA 35 HD. How will the CLA 35 HD do in these respects. Is it worth their effort?

So let us add some factual information from Zeiss to expand on what the CLA 35 HD leaflet from Angénieux and Zeiss already states:

The primary job of the CLA 35 HD is to allow the use of high quality cine lenses like the Zeiss/ARRI ULTRA PRIM E set used in 35 mm motion picture production alongside the new Angénieux zoom lenses, with the latest 2/3” high definition electronic cameras.

This is not an easy task and goes far beyond mere mechanical or simple optical adaptation. Cine lenses are designed to send their picture direct to...
film – without any optical detour – whilst lenses for electronic cameras send their images through a beam splitter first, in order to allow generation of color in the electronic image. To meet these requirements, Angénieux and Zeiss had to incorporate 12 lens elements, some made of extremely challenging optical materials, assembled and aligned with utmost precision in 10 groups. The result, however, is quite rewarding.

The image dimensions in a 2/3" electronic camera are 2.5 times smaller than a frame on 35 mm film. So the CLA 35 HD has to compress the image dimensions by a factor of 1:2.5, (0.4 x) and, at the same time, take care of the optical properties of the beam splitter device in the camera.

Since the CLA 35 HD does not expand the image like a teleconverter would, but rather compresses it, the effect on light transmission is the opposite. The CLA 35 actually enhances brightness. The explanation is simple. All the energy which would be distributed over a larger 35 mm film frame by the prime cine lens is concentrated onto the much smaller frame of a 2/3" CCD chip. The resulting gain is 2.5 stops! Thus an f/4 cine lens is converted by the CLA 35 HD into a f/1.6 video lens. (with inevitable slight losses due to the greater complexity of optical system.)

And how about resolution? On the optical test bench, Zeiss/ARRI ULTRA PRIME lenses typically produce resolutions of 200 lp/mm (linepairs per millimeter) and beyond. (Don’t be misled by the fact that Zeiss data sheets plot MTF graphs only for up to 40 lp/mm! This is much more than the highest resolving film stock currently available can process (around 160 lp/mm). So the performance of these lenses has ample reserves. Transferred through the CLA 35 HD with the compression factor of 2.5 x we climb toward the stratospheric (theoretical) resolution of a stunning 500 lp/mm!

We do not claim that such extreme resolution is required in digital imaging in the foreseeable future. But we do know for sure that microstructures on semiconductors are made today using Zeiss lenses that resolve 5,000 lp/mm (although in monochromatic deep UV light. See CLN #12)! Publishing these figures here serves just one purpose: To make clear that the CLA 35 HD is not likely to create a bottleneck when it comes to sharpness. First independent tests in the lab of a renowned film camera manufacturer showed results which clearly support our point.

In short: Since the CLA 35 HD focuses the optical quality of an already excellent 35 mm cine lens by a factor of 2.5 x onto a much smaller frame on a 2/3" CCD chip, the image quality parameters of the resulting picture are extremely good.

How do Zeiss T* and Rollei HFT compare?

Since this has recently grown into a frequently asked question we feel it is appropriate to provide an official and unequivocal answer from Carl Zeiss:

HFT, meaning “High Fidelity Trans- fer”, is a multi-layer anti-reflection coating system co-developed by Zeiss and Rollei. This occurred several decades ago at a time when Zeiss T* coating was new on the market and could only be applied at the Zeiss Oberkochen plant to rather small camera lens production batches. Rollei envisaged very large volume production in their then new Singapore plant and therefore encouraged this joint development.

Today the situation is this: HFT has become a well established trademark for Rollei’s proprietary multi-layer anti-reflection coating. The optical performance of this Zeiss/Rollei co-development is so close to the performance of the original Zeiss T* that one can hardly detect any difference in all practical picture taking.

The Planar®, Distagon®, Sonnar® lenses that Rollei produces under license from Carl Zeiss are all HFT coated by Rollei. All the lenses that Carl Zeiss produces for Rollei at the Zeiss Oberkochen plant are actually Zeiss T* coated. However, the designation on these lenses is “HFT” in the interest of remaining fully consistent throughout the Rollei product range.

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